AMENDMENTS TO DRAWINGS

Please add new Figs. 8 and 9, attached hereto, which show in flow chart form the method steps recited in claims 1-5.

REMARKS

Reconsideration of the application is respectfully requested for the following reasons:

1. Amendments to Specification and Drawings

New drawing Figs. 8 and 9 have been added to show the method steps recited in claim 1-5, thereby overcoming the objection made in items 1 and 2 on pages 2-3 of the Official Action. Page 3 of the specification has been amended to refer to new drawing Figs. 8 and 9.

The steps illustrated in Fig. 8 are taken *verbatim* from claim 1 and page 2, lines 7-22 of the original specification. The steps illustrated in Fig. 9 are taken with minor wording changes from claims 3 and 4 and page 5, line 18 to page 6, line 5 of the original specification. Accordingly, new drawing Figs. 8 and 9 are clearly supported by the original disclosure and do not introduce any "new matter."

2. Rejection of Claims 1-3, 6, 8, and 9 Under 35 USC §102(e) in view of U.S. Patent Publication No. 2004/0052306 (Ibrahim)

This rejection is respectfully traversed on the grounds that Fig. 8 and paragraph [0061] of the Ibrahim publication (or any other portion of the Ibrahim publication) do not disclose or suggest, as alleged by the Examiner, the claimed steps of:

> ***estimating virtual received data symbols*** *($Y_k[n]$) based on said* ***channel response estimate*** *($W_k[n]$) and the simulated input data symbol ($X'_k[n]$); and*
>
> *calculating a different quantity ($e_k[n]$) between the delayed actual received data symbol ($Q_k([n])$ and the estimated virtual received data symbols ($Y_k[n]$) to represent the channel noise of said subchannel k.*

Instead, the cited passages in the Ibrahim publication describe a channel response determination module 106 for estimating the channel response in which a plurality of accumulators 162 are operably coupled to produce corresponding coefficients of the estimated channel response 118 based on a corresponding delayed representation of the reconstructed spread spectrum complex baseband samples 116 and an error signal 174.

The claimed invention is take the channel response estimate as the input to generate virtual received data symbols. In contrast, the Ibrahim publication merely teaches use of the whole system 106 to produce the channel response estimate 118. There is no suggestion of **estimating** any sort of virtual received data symbols **based on** the channel response **estimate** and the simulated input data symbol as claimed. The Examiner will note that the claimed invention involves estimating the virtual received data symbols based on an estimate of the channel response, *i.e.*, on an **estimate based on an estimate**. Ibrahim does not even remotely teach such an **estimate based on an estimate**.

In addition, Ibrahim clearly fails to teach calculation of a *different quantity* between the delayed *actual* received data symbol and the *estimated* virtual received data symbols to represent the channel noise of the subchannel. Ibrahim cannot teach such a calculation between actual and estimated virtual received data symbols because Ibrahim does not perform any estimate of virtual received data symbols.

The differences between the claimed invention and the method of disclosed in the Ibrahim publication can be seen in the following table:

Claimed	Ibrahim
Calculate a channel response estimate of one subchannel based on: • *said delayed actual received data symbols; and* • *said simulated input data symbols according to LMS algorithm* Estimate virtual received data symbols based on: • *said channel response estimate; and* • *the simulated input data symbol* and Calculate a difference quantity between: • the actual received data symbols; and • the estimated virtual received data symbols	Use accumulators to produce coefficients of the estimated channel response based on: • *a corresponding delayed representation of the reconstructed spread spectrum complex baseband samples; and* • *an error signal*

Because the Ibrahim patent does not disclose all of the method steps recited in claim 1, it is respectfully submitted that the Ibrahim patent does not anticipate claim 1 and withdrawal of the rejection of claims 1-3, 6, 8, and 9 under 35 USC §103(a) is respectfully requested.

3. Rejection of Claims 4 and 10 Under 35 USC §103(a) in view of U.S. Patent Publication No. 2004/0052306 (Ibrahim) and U.S. Patent No. 6,611,513 (Brink)

This rejection is respectfully traversed on the grounds that the Brink patent, like the Ibrahim publication, fails to disclose or suggest a channel noise estimating method that includes the steps of:

- estimating virtual received data symbols based on a channel response estimate, and
- comparing the estimate virtual received data symbols with actual symbols to represent the channel noise,

as recited in claim 1, from which claims 4 and 10 depend. Instead, the Brink patent merely mentions that "*After the decoding, the estimates on the transmitted information bits are available at the output of the hard decision device by taking the sign of the APP-soft output values for the information bits*" (col. 5, lines 22-28), which is followed by iterative demapping/decoding. There is no suggestion in Brink of estimating virtual received data symbols or of comparing the estimated symbols with actual symbols to represent channel noise, and therefore the Ibrahim and Brink patents, whether considered individually or in any reasonable combination, could not possibly have suggested the claimed invention, and withdrawal of the rejection of claims 4 and 10 under 35 USC §103(a) is respectfully requested.

4. Rejection of Claims 5 and 11 Under 35 USC §103(a) in view of U.S. Patent Publication Nos. 2004/0052306 (Ibrahim) and 2005/0063493 (Foster)

This rejection is respectfully traversed on the grounds that the Foster publication, like the Ibrahim publication, fails to disclose or suggest a channel noise estimating method that includes the steps of estimating virtual received data symbols based on a channel response estimate, and comparing the estimate virtual received data symbols with actual symbols to represent the channel noise, as recited in claim 1, from which claims 5 and 11 depend. Instead, the Foster publication is directed to preamble detection in digital data receivers, and in particular correction

of signal impairment caused by frequency errors in a burst mode receiver, utilizing signal power estimation derived from differential phase components of the received signal. Accordingly, the Foster publication could not have suggested modification of the channel noise estimating method of Ibrahim to obtain the claimed invention, and withdrawal of the rejection of claims 5 and 11 under 35 USC §103(a) is respectfully requested.

5. Rejection of Claim 7 Under 35 USC §103(a) in view of U.S. Patent Publication No. 2004/0052306 (Ibrahim) and U.S. Patent No. 5,406,569 (Isozaki)

This rejection is respectfully traversed on the grounds that the Isozaki patent, like the Ibrahim publication, fails to disclose or suggest a channel noise estimating method that includes the steps of estimating virtual received data symbols based on a channel response estimate, and comparing the estimate virtual received data symbols with actual symbols to represent the channel noise, as recited in claim 1, from which claim 7 depends. Instead, the Isozaki patent is directed to error correction in a digital sync. detection apparatus, and does not disclose any sort of channel response estimate or virtual received data symbol estimation based thereon. Accordingly, withdrawal of the rejection of claim 7 under 35 USC §103(a) is respectfully requested.

Having thus overcome each of the rejections made in the Official Action, withdrawal of the rejections and expedited passage of the application to issue is requested.

Respectfully submitted,
BACON & THOMAS, PLLC

Date: April 12, 2007

By: BENJAMIN E. URCIA
Registration No. 33,805

BACON & THOMAS, PLLC
625 Slaters Lane, 4th Floor
Alexandria, Virginia 22314
Telephone: (703) 683-0500

NWB:S:\Producer\bea\Pending A...H\CHEN 724742\a01.wpd